TOOLS FOR WORKMEN WHO CANNOT SEE

Gold V. Sanders

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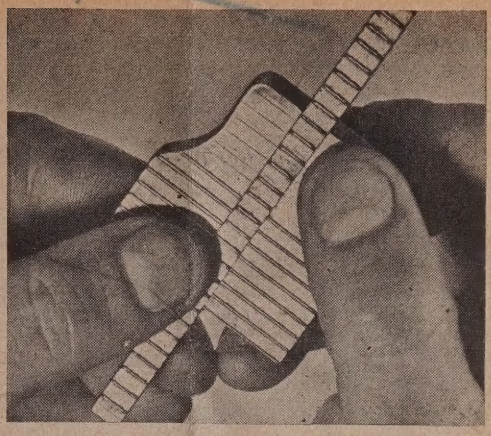
New aids for blind craftsmen put fingers and ears to work even at technical jobs.

By GOLD V. SANDERS

A BLIND man now can find out what's wrong with your ailing radio just about as quickly as a man with perfect sight, by using a device invented by an ingenious blind physicist. Dr. Clifford Witcher, of New York City, sightless since he was three weeks old, has perfected a Braille analyzer with which a blind radio serviceman employs his senses of touch and hearing to measure electrical quantities.

This is but one of several newly invented devices that promise a brighter future for ambitious, mechanically minded blind persons. Dr. Witcher has also made a micrometer with which they can readily measure a thousandth of an inch, and a vernier depth gauge that gives their sensitive fingers quick measurements in sixty-fourths of an inch.

These and other new aids for the blind pictured on these pages are being prepared

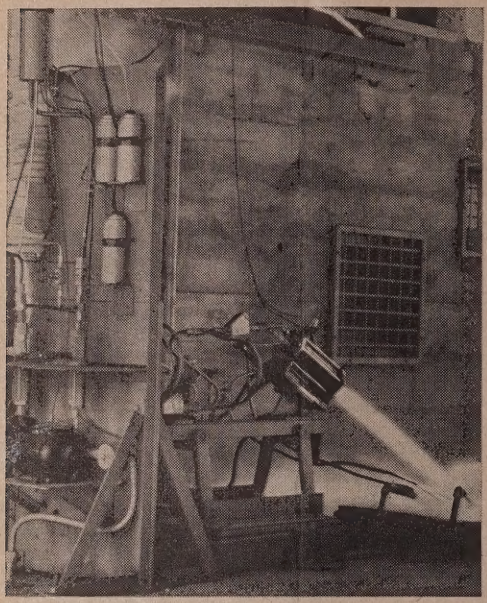


Raised ridges on the division lines of the vernier depth gauge (above) make it easy for the sensitive fingers of a sightless person to take measurements with it, accurate to 1/64 of an inch.

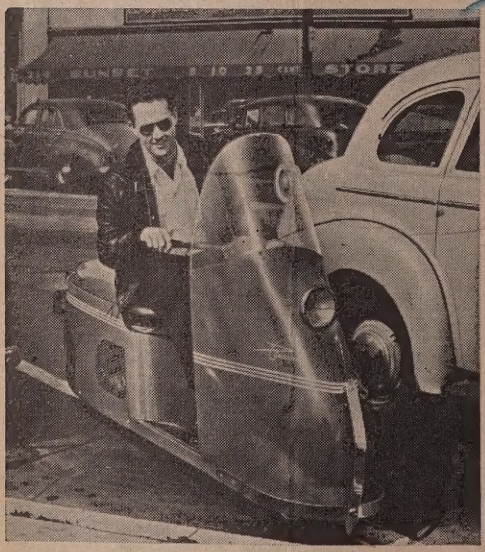
PSM Staff Photos

Dr. Clifford Witcher, blind New York physicist, demonstrates for Popular Science Monthly his Braille analyzer (below, in foreground), which measures voltage, amperage or resistance to disclose what is wrong with a radio circuit.

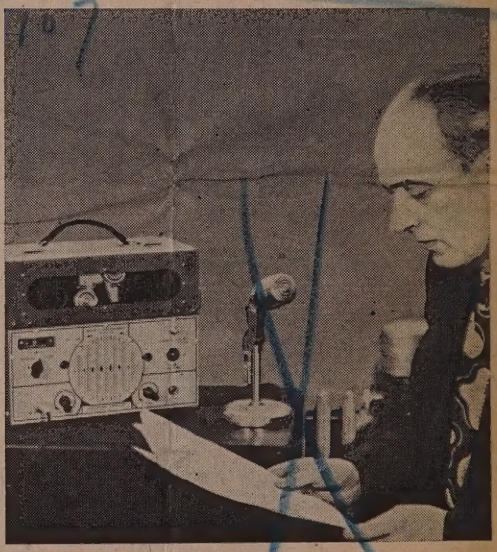
Tests Rocket Fuel. Looking like a theatrical spotlight, this tiny engine at California Institute of Technology is testing liquid oxygen and alcohol, a fuel the Germans used in their V-2s. It develops 250 pounds of thrust as flame flares from its ⅝-inch nozzle against a water-cooled steel plate.



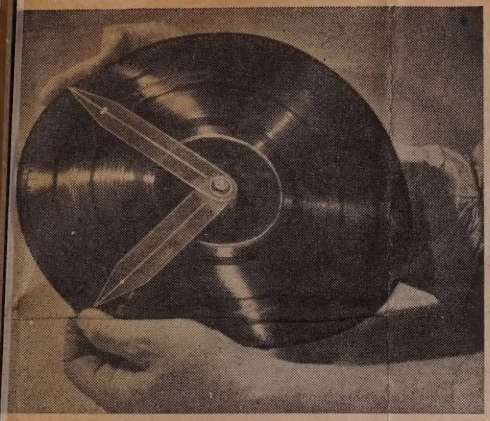
Mechanical Striper. Speed, ease and economy are combined in this device for painting safety stripes for traffic lanes, steps, and platforms. Controlled by a finger trigger, paint flows from hollow handle and is applied with a carpet-covered roller. Capacity is three pints.



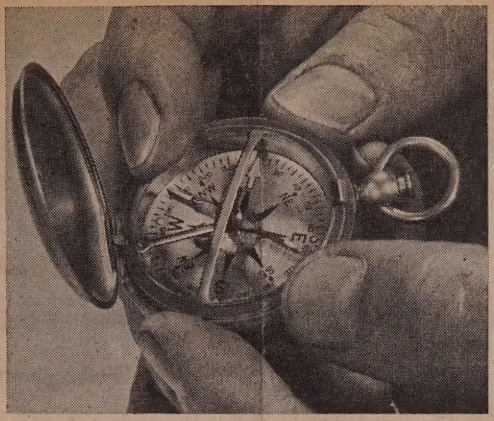
Streamlined Motorcycle. A 6½-hp. engine drives this two-wheeler 40 miles on a gallon of gas, gives it a top speed of over 40 m.p.h. Made by Salsbury Motors, Pomona, Calif., it features an automatic clutch and transmission.



Dictating to a Wire. Hooked to any 115-volt AC circuit, the compact Peirce wire recorder, distributed by Bell & Howell, is good for 66 minutes of continuous recording. An amplifier unit permits use of the wire record for public-address work.

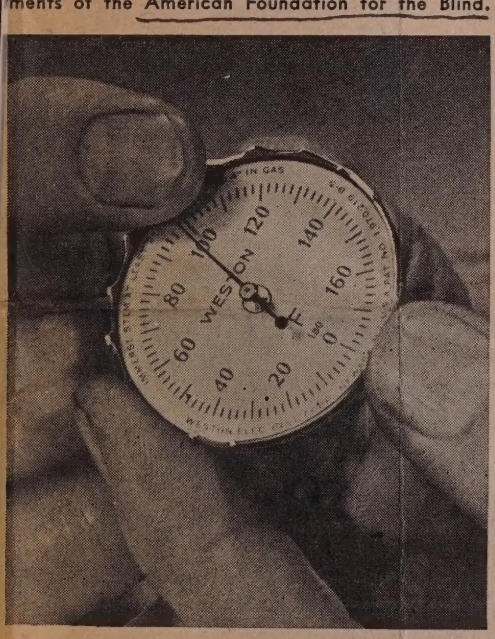


Old phonograph records provide slide rules large enough for Braille markings. The symbols, around the rim on the under side of the disk, correspond with notches on the top side, permitting speedy calculations. Raised marks also identify the two pointers.

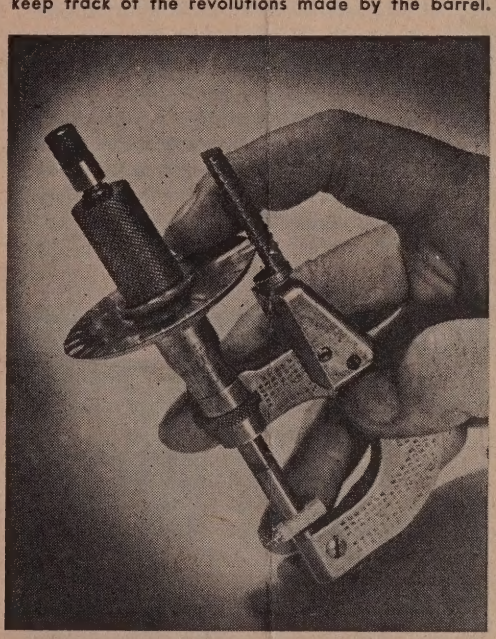


An ordinary compass can be converted for touch reading with the addition of a button to hold the needle in place while the user's forefinger determines its position. The north-pointing end of the needle has wire around it for quick identification.

The photographic or laboratory thermometer below has carefully spaced notches around the edge of its dial that allow the position of the needle to be determined by touch. It is one of the developments of the American Foundation for the Blind.

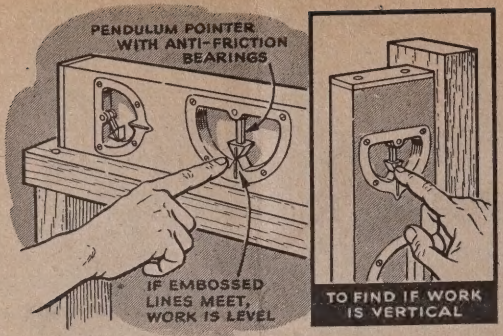


A disk on the barrel and a spirally marked post at the side of a standard micrometer adapt it for use by the blind. Each division on the disk represents 1/1,000 of an inch, and the ridges on the side post keep track of the revolutions made by the barrel.



for manufacture by the Technical Research Council of the American Foundation for the Blind, in New York. This council is a clearing house for new ideas; sorting out the feasible ones, it builds models, simplifies devices, and arranges for their manufacture at cost for those who can use them.

Most devices to help the blind are invented by the blind themselves—probably because people with normal sight generally do not know what is needed. Dr. Witcher's inventions all grew out of his own necessity.



Two free-swinging pointers, one for horizontal and one for vertical indications, replace the usual bubbles in a carpenter's level designed to permit easy and accurate readings by sightless craftsmen.

An electronics expert with a Ph.D. from Columbia University, he did important work on radar at the Bell Telephone Laboratories during the war.

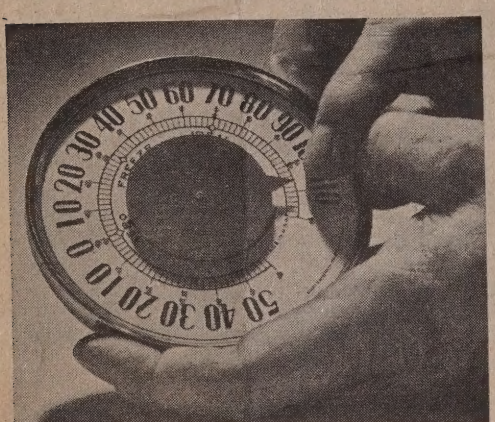
In his research work, Dr. Witcher had daily need of a precision gauge, so he adapted a standard micrometer for touch reading by putting a disk with raised lines on the turning part. At first he took readings by counting the turns of this disk, but that was too slow; so he devised another part with raised lines that serve to count the turns.

Dr. Witcher's Braille analyzer, in its present compact form, is the outgrowth of at least five years of intensive inventive effort. It consists of a small, easily carried box and a pair of earphones. The operator adjusts a potentiometer until the analyzer's audible signal fades out, then calculates on a Braille scale the value of the electrical quantity involved.

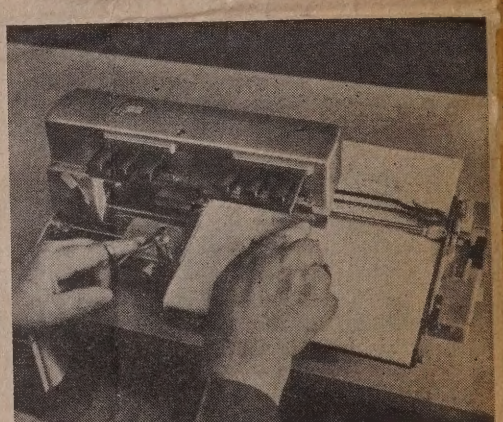
Blind persons now wait hopefully for good news from the Haskins Research Laboratories in New York, where a staff of top-notch scientists is attempting to develop new guidance and reading devices for them, based on the latest knowledge of light and sound phenomena. These scientists hope to construct instruments that will guide the blind somewhat as radar guides an airplane pilot through clouds and darkness. This ambitious program is sponsored and financed by the Office of the U. S. Surgeon General, and continues work done during the war by the Office of Scientific Research and Development.

Among the aids being worked upon intensively here is the "optical cane," partly developed by the Army Signal Corps. A photoelectric cell is the heart of this guiding device, which is carried like a briefcase and looks like a new-type, elongated camera. Reflected light activates the cell, producing a signal audible in earphones. It is far from being perfected, according to Dr. Frank C. Cooper, head of the Haskins research staff. In fact, none of the devices under study has been perfected, but the staff has found clues of great promise and is pressing its research.

With such a program being pushed by the government, and with the development work being done by the Technical Research Council of the Foundation, the outlook for the blind is more hopeful than it has ever been.



Another special thermometer for the blind. It uses a system of raised dots to indicate the position of the pointer. Double dots at −30, 0, 30, 70 and 100 degrees and single dots at intermediate figures facilitate readings by trained fingers.



This eight-pound, six-key Braille typewriter was designed by J. Robert Atkinson, blind general manager of the Los Angeles branch of the Braille Institute of America, where the machine is now in regular production after several years of development.

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Tools for workmen who cannot see.

Date Due

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Sanders, Gold V.

AUTHOR

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